SPECIFICATIONS

FOR

CONCRETE CONSTRUCTION

CITY OF EDINA, MINNESOTA

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Revised January 2014

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SPECIFICATIONS

FOR

CONCRETE CONSTRUCTION

CITY OF EDINA, MINNESOTA

Revised January 2014

1.0 GENERAL

The General Conditions and the Special Provisions and Conditions as embodied in these Contract Documents shall be applied to all work and materials to be furnished under these Specifications.

2.0 LOCATION

The Portland cement concrete to be constructed under this contract is located in the City of Edina, Hennepin County, Minnesota as shown on the plans and drawings.

3.0 SCOPE OF WORK

The work to be done under this contract shall include the furnishing of all labor, material, tools and equipment to construct cast in place portland cement concrete as shown on the drawings and as specified herein.

4.0 CONCRETE

Concrete shall conform to the requirements of Minnesota Department of Transportation Specification 2301, 2461 and 2531, 2014 Edition, subject to the mix design requirements.

Concrete shall have a minimum compressive strength of 4000 psi at 28 days, minimum cement content of 400 pounds, minimum cementitious content of 530 pounds, maximum cementitious content of 658 pounds, and maximum water-cementitious material ratio at point of placement for machine placement 0.42 and for hand placement 0.45. The slump limit will be determined as needed for proper placement; 5-inch maximum. No minimum as long as proper consolidation is being performed. Early-strength concrete mixes shall be designed to reach opening compressive strength of 3000 psi at a predetermined time (i.e., 48 hours, 24 hours, etc.).

Air content of concrete shall be six-and-one-half percent (6.5%) plus or minus one-and-one-half percent (1.5%) and shall be produced by the use of an approved air-entraining admixture.

5.0 EXCAVATION

On Existing Roadways:
The Contractor shall not excavate more than one side of the street at one time unless authorized to do so by the Engineer.

Excavated material shall not be piled or bladed and allowed to remain on the traveled portion of the street, but rather hauled to the designated dump area.

Only enough excavated material needed to properly backfill behind the curb will be permitted to remain on the job site during the curb and gutter construction. The excess excavated material shall be loaded and hauled to the dump site at the contract unit price for common excavation.

On New Construction or Total Rebuilds:
The Contractor may stockpile on site as approved by the Engineer. The dump site at the point of disposal shall be kept leveled by the Contractor in all cases.

6.0 BASE

The base for curb and gutter shall be constructed of material as shown on the plans and shall be well drained, compacted with an approved vibratory compactor to a firm surface with a uniform bearing power, and pass all roll tests prior to concrete placement. Moisture content of the base shall be obtained and maintained as specified. The surface of the base shall be in a moist condition when the concrete is placed.

Base material under concrete driveway, pavement, or under concrete sidewalks, or other concrete flatwork is considered incidental to the contract and is included with the unit price of the item. This includes, but is not limited to; class 5, class 5Q, and select granular borrow as called out in the typical section.

7.0 FORMS

Metal benders rather than a series of straight forms shall be used for concrete curb and gutter on street returns, cul-de-sacs and/or where horizontal radii are prescribed. Ensure that forms used to shape back of curbs at returns have height at least equal to design thickness of pavement and curb height. Rigid forms shall not be used on a radius of less than 150 feet.

Before placing the concrete, the inside of the forms shall be clean and coated with an approved form coating material in accordance with MnDOT 3902. All forms shall be set true to line and grade and securely braced prior to placing concrete.

The Contractor shall adjust all catch basin castings which require adjustment (no wood shims, plastic shims, or rocks allowed). Payment for such adjustment shall be at the contract unit price, which price shall be compensation in full for all costs incidental to the adjustment. When installing a new catch basin and/or casting assembly, the adjustment shall be incidental.

The curb and gutter shall be built to fit around any drainage structures which may be encountered. Normally, final adjustment of structures shall be made at the time the forms are set. The transitions from the regular curb and gutter sections shall be constructed as directed by the Engineer. The exposed surface shall be finished in the same manner as the regular curb and gutter sections.

8.0 CONCRETE FLAT WORK

The Contractor shall provide 24 hour notice to the property owner before any driveway is blocked and give them sufficient time to move their vehicles out of their garage and driveway. No driveway shall be blocked for more than one week.

All driveways removed for construction purposes shall be replaced to the pre-removal limits and shall match the existing driveway material and finish. No extra payment shall be made for matching the existing finish of a concrete driveway.

This work shall consist of the construction of driveway pavement six (6) inches in depth for residential driveways and eight (8) inches in depth for commercial driveways. If sidewalk abuts driveway, the first sidewalk panel on each side of the driveway shall be six (6) inches in depth.

Forming and pouring driveway aprons will not be allowed at the same time as the street curb is formed and poured. Concrete driveway pavement must be poured separately from straight-line curb and gutter.

Concrete driveway replacement slabs shall be poured within twelve (12) hours of the time the driveway apron form is removed.

If an existing curb stop or new curb stop falls in a driveway, sidewalk or street the city requires the Contractor to install a Ford A-1 meter box over the curb stop. This work will be incidental to the concrete work being done.

9.0 PEDESTRIAN CURB RAMPS

This work consists of constructing 6” thick concrete pedestrian curb ramps with Truncated Dome Systems (detectable warning surfaces) in compliance with the Public Rights-of-Way Accessibility Guidelines (PROWAG). This work shall be performed in accordance with the applicable MnDOT Standard Specifications, , the details in the Appendix, and the following:

The Contractor shall select a truncated dome product from the approved products list at http://www.mrr.dot.state.mn.us/materials/materials.asp. Only approved products are allowed. Stamped concrete is not allowed. Detectable warning surfaces shall be performed in accordance with MnDOT Standard Plate 7038A.

All truncated dome systems shall be installed in strict accordance with the recommendations of the manufacturer. The installation protocol shall include details regarding product specific construction requirements and how the system will be sealed to mitigate freeze/thaw damage through moisture intrusion. The Contractor shall provide this information to the Engineer for approval two weeks prior to commencement of work.

The entire truncated dome area typically 2 feet x 4 feet shall contrast visually from the adjacent walking surfaces. The entire truncated dome area shall be a cast iron material, as manufactured by Neenah Foundry or approved equal.

At the time of construction, all Truncated Dome Systems are specified to be in dimensional and alignment compliance with the requirements of the ADAAG as detailed in the Plan.

Pedestrian curb ramps shall be paid for by the each, included shall be the 6" concrete walk, aggregate base, and truncated domes.

10.0 PLACING CONCRETE

Concrete Pavement shall be constructed in accordance with the provisions of MnDOT 2301 and as modified below:

The concrete shall be placed promptly after mixing, and in a manner which will prevent any segregation of the mix. Concrete shall be tamped and spaded or vibrated sufficiently to bring some mortar to the surface and until all voids are filled inside the concrete and no honeycombs will be evident upon removal of the forms. If honeycombs appear when forms are removed, it will be the decision of the Engineer if the concrete must be removed and replaced. Such removal and replacement will be at the Contractor's expense.

11.0 JOINTS

Contraction joints shall be provided at ten (10) foot intervals on straight curb and at five (5) foot intervals on radius curb. All divided forms for contraction joints shall be installed in curb forms so that the bottom of the divider plate is three (3) inches up from the bottom of the curb and gutter.

Joint sealing as specified in Minnesota Department of Transportation 2531 will not be required.

The Contractor shall provide a half inch wide expansion joint at intervals not exceeding one hundred and fifty (150) feet. All expansion joint material shall extend through the entire thickness of the curb and gutter and shall be cut true to the shape of the section as shown in the detail drawing.

Expansion joints shall be placed in curb and gutter at the beginning and end of all radii, at catch basins, where curb and gutter abuts a stationary object, where the radius of the concrete apron meets the curb line, at the back of the 3' apron, and wherever new concrete abuts existing concrete.

Align joints with joints in adjoining work unless a ½-inch preformed isolation/expansion joint isolates the work. Place transverse joints at right angles to the centerline of the pavement unless otherwise required by the contract

Sidewalk joints shall match existing sidewalk joint spacing. New sidewalk panel joints shall be 5' apart and not to exceed 36 square feet (SF) per panel.

When replacing a concrete driveway, the new construction joints in the apron must be of the hand tooled joint method. Any concrete used in a driveway or sidewalk, besides the apron, the joints will need to match the existing joints prior to removal. This can include, but is not limited to equipment and labor for hand tooled joints and saw cut joints.

12.0 FINISHING

The entire exposed surface of curb and gutter shall be finished smooth and even. The final product shall be uniform and all joints and edges shall be rounded with a suitable edging tool. No tool marks shall be left on the exposed concrete. After the exposed concrete has been finished smooth and even with a trowel, it shall then be followed by a light broom finish at right angle to the centerline of the street or match existing finish.

13.0 CURING

Apply liquid curing compound in a fine spray to form a continuous, uniform film on the horizontal surface and vertical edges of pavement, curbs, and back of curbs immediately after surface moisture has disappeared, but no later than 30 minutes after finishing. With approval of the engineer, the timing of cure application may be adjusted due to varying weather conditions and concrete mix properties to ensure acceptable macro texture is achieved and bleed has evaporated

Membrane curing compounds shall be clear TK2519 DCWB, AMS 3754 Clear or approved equal as directed by the Engineer. When tying into existing concrete surfaces, Contractor shall use a curing compound that best matches existing coloration. Application rate shall be 150 square feet (SF) per gallon. Apply homogeneously to provide uniform solid white opaque coverage on all exposed concrete surfaces (equal to a white sheet of typing paper).

Curing shall be performed by applying the membrane curing compound or polyethylene to the exposed surface of the concrete immediately after the final finishing operation. When forms are removed in less than 72 hours after placing the concrete, curing compound shall be applied immediately or the trenches shall be backfilled immediately with suitable materials. In no case shall the forms be removed in less than 12 hours after placing the concrete.

The Contractor shall protect the concrete from damage caused by inclement weather, vandalism or freezing. After September 15, Contractor shall cure all concrete with polyethylene or thermal blankets for a period of 72 hours or as directed by the Engineer. Any polyethylene or thermal blankets required by the Engineer will be considered incidental to the contract.

Concrete treating oil meeting Minnesota Department of Transportation Specification 3917 shall be applied in two equal applications totaling 0.06 gallons per square yard on all concrete poured. No payment shall be made for treating oil but will be considered incidental to the price of the concrete.

13.1 Protection against Cold Weather

If the National Weather Service forecast for the construction area predicts air temperatures of 36 degrees F or less within the next 24 hours and the contractor wishes to place concrete, they will need to submit a cold weather protection plan.

Cold Weather Protection Plan will be submitted in writing to the engineer with a proposed time schedule and plans for cold weather concrete protection that provide provisions for adequately protecting the concrete during placement and curing. Do not place concrete until the engineer accepts the contractor's cold weather protection plans.

14.0 CURB AND GUTTER

The Contractor shall replace "in kind" all materials removed or disturbed at the back of the curb and gutter or edge of pavement. Should there be a grading problem, either cut or fill from the curb, this area shall be graded as directed by the Engineer. All backfill shall be tamped with a mechanical tamper.

All backfill shall be to the top of curb. All curb backfill is considered incidental to the cost of curb and gutter.

15.0 CONCRETE SAWING

Concrete driveways which do not meet the curb elevation shall be marked by the Engineer. The Contractor shall saw cut at the marked location and remove the concrete. Initial saw cut operations per phase or project shall utilize wet sawing techniques or approved equal to reduce the amount of dust created by sawing operations. Saw cut shall be straight and cut full depth to provide easy removal and no damage to abutting concrete. Concrete sawing shall be paid at the contract unit price per lineal foot. If damage is done to the abutting concrete it shall be removed and replaced by the Contractor with no additional compensation.

16.0 STORM SEWERS AND APPURTENANCES

The construction of and moving of any storm sewer catch basins or storm sewer appurtenances shall be in accordance with Edina Standard Plates. All concrete mixed on site for construction shall be type I-A portland cement.

Two No. 4 reinforcing bars fifteen (15') feet long shall be placed in the concrete adjacent to catch basins and manholes or at other locations where the concrete is likely to crack, if curb helper design permits. This work is considered incidental to the curb and gutter construction.

17.0 BASIS OF PAYMENT

17.1 Concrete Curb and Gutter

Concrete curb and gutter shall be paid for at the contract unit price per lineal foot measured along the face of the curb at the gutter line. The area of catch basin intakes in the curb and gutter will be deducted from the measured curb and gutter. Payment shall be compensation in full for all costs incidental to construction, including but not limited to: backfill, expansion fillers, and curing compound.

17.2 Concrete Aprons

Concrete driveway aprons shall be paid for at the unit price bid for concrete driveway pavement. Unit price includes, but is not limited to, final subgrade/subbase preparation, joints and sealing and surface curing and pavement protection, and boxout for fixtures. Measurement will be in square yards of concrete for each thickness of driveway: residential (6 inches) and commercial (8 inches).

17.3 Sidewalk and Concrete Median

Sidewalk and Concrete Median will be measured in square feet or square yards of concrete area per the proposal form and paid at the unit price per concrete area. Unit price includes, but not limited to, final subgrade/subbase preparation, joints and sealing, surface curing and pavement protection, and boxouts for fixtures.

18.0 MECHANICAL CURB MACHINES

Mechanical curb machines may be used to place curb and gutter by using an approved extrusion machine that will produce a finished curb meeting the standards, workmanship, and appearance that would be achieved by using metal forms. The same tolerances which apply using metal forms shall apply to work done with curb machines.

[End of Concrete Construction]